Distribution, ecology and nuisance effects of the freshwater invasive diatom *Didymosphenia geminata* (Lyngbye)

M. Schmidt: a literature review

by

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With 5 figures


**Abstract:** The diatom *Didymosphenia geminata* (Lyngbye) M.Schmidt has been commonly considered a taxon restricted to pristine habitats in mountainous areas of circumboreal regions. Recent studies show that it has a broader distribution and ecological amplitude. This shift seems to have occurred recently, as it now forms large growths in rivers within its native geographical area (North America, Europe) but also mass developments have recently appeared in New Zealand, where it is considered an aggressive invasive species with dramatic ecological and economic impacts. This nuisance organism grows attached in streambeds and may impact freshwater fish and aquatic plants and insects, causing severe disturbance in food webs. This paper investigates the historic and current biogeographic range of this invasive species (and varieties) based on 1000 citations collected mainly from the scientific literature. The locations where this diatom has appeared, including both fossil and recent records, are presented in world distribution maps. Our results confirm that the native range of *D. geminata* is almost restricted to the Holarctic region, though its distribution area is broader than usually reported in the literature. The ecological profile of this alga, along with its nuisance effects, is also discussed. Excessive growths do not only appear in areas where this species is presumably exotic. Contrarily to general statement, reports of mass developments of *D. geminata* date back to the 19th century. World references to *D. geminata* have increased exponentially during the last decades; however, with respect to the whole diatom literature during the XIX and XX centuries, the relative frequency of citations has decreased progressively.

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